

REMARKS

The Office action dated October 17, 2005, and the references cited therein have been received and carefully reviewed.

As a result of the Office action, the drawing Figure 18 is objected to for containing a minor typographical error. Submitted herewith for approval by the examiner is a Replacement Sheet of drawing containing corrected Figure 18. No new matter has been added.

A number of objections on formal grounds have been raised in connection with the specification, all of which are believed to have been overcome by the above amendment. No new matter is believed to have been added.

Claims 2-6, 10-12, 14-17, and 21-22 are also objected to on formal grounds for containing a number of minor typographical and grammatical errors, all of which are believed to have been addressed by the above amendment.

Claims 1-4, 6, 10-11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' Admitted Prior Art shown in Figures 23-24 (AAPA Figures 23-24) in view of U.S. 6,443,692 to Sakamoto and U.S. 6,336,788 to Fujii. Claims 12, 14-16 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA Figures 23-24 in view of

Sakamoto and Fujii, and further in view of U.S. 6,527,507 to Rollwage. Claims 1 and 13 are rejected under the judicially created doctrine of obviousness-type double patenting rejection as being unpatentable over claim 1 of U.S. 6,733,230 in view of Fujii. Claims 2, 3, 5, 6, 10, and 11 are rejected under the judicially created doctrine of obviousness-type double patenting rejection as being unpatentable over claims 18, 18, 19, 18, 18, and 18, respectively, of U.S. 6,733,230 in view of Fujii, and further in view of AAPA Figures 23-24. Claim 4 is rejected under the judicially created doctrine of obviousness-type double patenting rejection as being unpatentable over claim 18 of U.S. 6,733,230 in view of Fujii and AAPA Figures 23-24, and further in view of Sakamoto. Claim 12 is rejected under the judicially created doctrine of obviousness-type double patenting rejection as being unpatentable over claim 18 of U.S. 6,733,230 in view of Fujii and AAPA Figures 23-24, and further in view of Rollwage. Claims 14, 15, 17, 21, and 22 are rejected under the judicially created doctrine of obviousness-type double patenting rejection as being unpatentable over claim 18 of U.S. 6,733,230 in view of Fujii and AAPA Figures 23-24, and further in view of Rollwage. Claim 16 is rejected under the judicially created doctrine of obviousness-type double

patenting rejection as being unpatentable over claim 19 of U.S. 6,733,230 in view of Fujii, AAPA Figures 23-24, Rollwage, and further in view of Sakamoto. These references have been carefully reviewed but are not believed to show or suggest Applicants' invention as now claimed. Reconsideration and allowance of the pending claims is therefore respectfully requested in view of the following remarks.

By the above amendment, claim 1 has been amended and it now recites "wherein the pump casing further defines a first discharge port and a second discharge port respectively communicating with the first pump channel and the second pump channel and formed separately from each other, so that the fluid is discharged from the first and second channels via respective first and second discharge ports and is converged at the convergence device". Similarly, claim 14 has been amended and it now recites "wherein the first discharge port and the second discharge port are formed separately from each other in the pump casing". With this arrangement, the pulsation of the fluid discharge from the first discharge port and the pulsation of the fluid discharged from the second port can be reliably cancelled when the fluid converges at the convergence device. The examiner has acknowledged that the

AAPA Figures 23-24 neither show a pulsation canceling device nor an impact reducing device.

Moreover, Sakamoto teaches to shift the position of the grooves on the first side of the impeller by half the pitch of the grooves from the position of the grooves on the second side opposite to the first side. However, Sakamoto is silent as to a definite reason why such a shift of position of the grooves has been incorporated. FIGS. 3 and 4(A) show an outlet port 34 where the fluid from the first and the second pump channels directly converges and collides with the partition wall 36. With this arrangement, it is not possible to control the flow of the fluid to enable effective cancellation of the pulsations.

Although Fujii may teach an impact reducing device, Applicants respectfully submit that a person of ordinary skill in the art would not combine this reference with Sakamoto to arrive at the claimed invention because Sakamoto does not teach the pulsation canceling device in conjunction with the convergence device and the controlled flow of the fluid from the first and the second pump chambers via the separated first and the second discharge ports.

More specifically, the prior art references do not disclose any motivation to combine the impact reducing device

and the pulsation canceling device to achieve the synergistic action for effectively reducing the noises.

Moreover, FIGS. 1 through 3 of Rollwage show communication holes 36 between two grooves 22 on the opposite side of the impeller. Rollwage does not show the impact reducing device and the pulsation canceling device.

Therefore, in view of foregoing, it is respectfully submitted that the claimed invention is patentable over the prior art.

Each issue raised in the Office action dated October 17, 2005, has been addressed and it is believed that claims 1-6, 10-17, and 21-22 are in condition for allowance. Wherefore, Applicants respectfully request a timely Notice of Allowance be issued in this case.

Respectfully submitted,  
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IN THE DRAWINGS:

Submitted herewith for approval by the examiner is one Replacement Sheet of drawing. No new matter has been added.